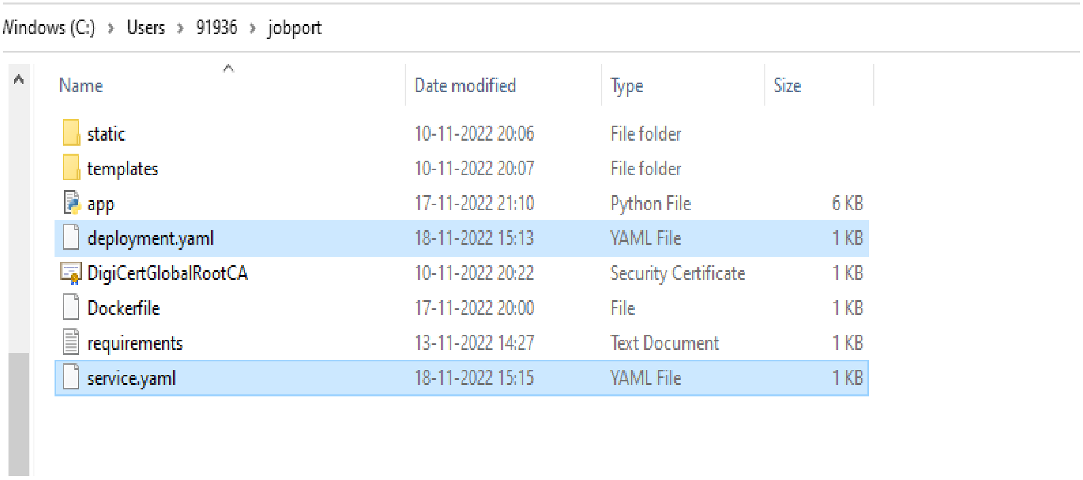
Deploy on Kubernetes Cluster

Deploy on Kubernetes

Date	18 November 2022
Team ID	PNT2022TMID23033
Project Name	Skill/Job Recommender Application

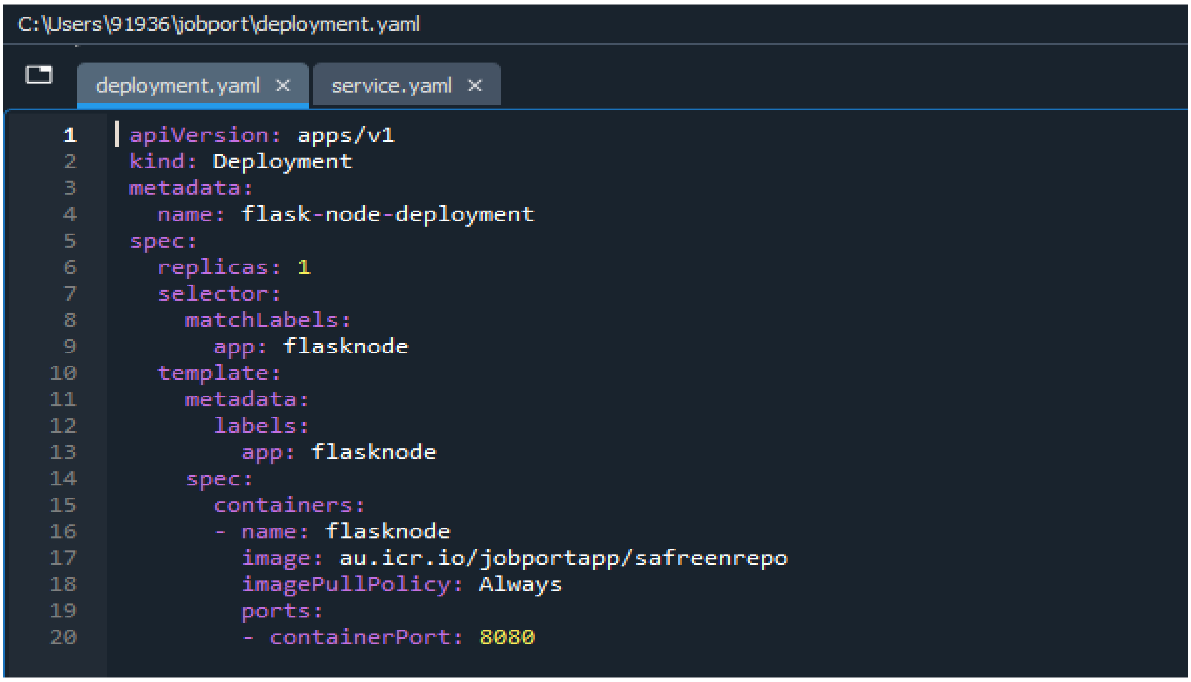
Step 1. Create configuration files for Kubernetes



Nindows (C:) › Users › 91936 › jobport

Name	Date modified	Type	Size
static	10-11-2022 20:06	File folder	
templates	10-11-2022 20:07	File folder	
app	17-11-2022 21:10	Python File	6 KB
deployment.yaml	18-11-2022 15:13	YAML File	1 KB
DigiCertGlobalRootCA	10-11-2022 20:22	Security Certificate	1 KB
Dockerfile	17-11-2022 20:00	File	1 KB
requirements	13-11-2022 14:27	Text Document	1 KB
service.yaml	18-11-2022 15:15	YAML File	1 KB

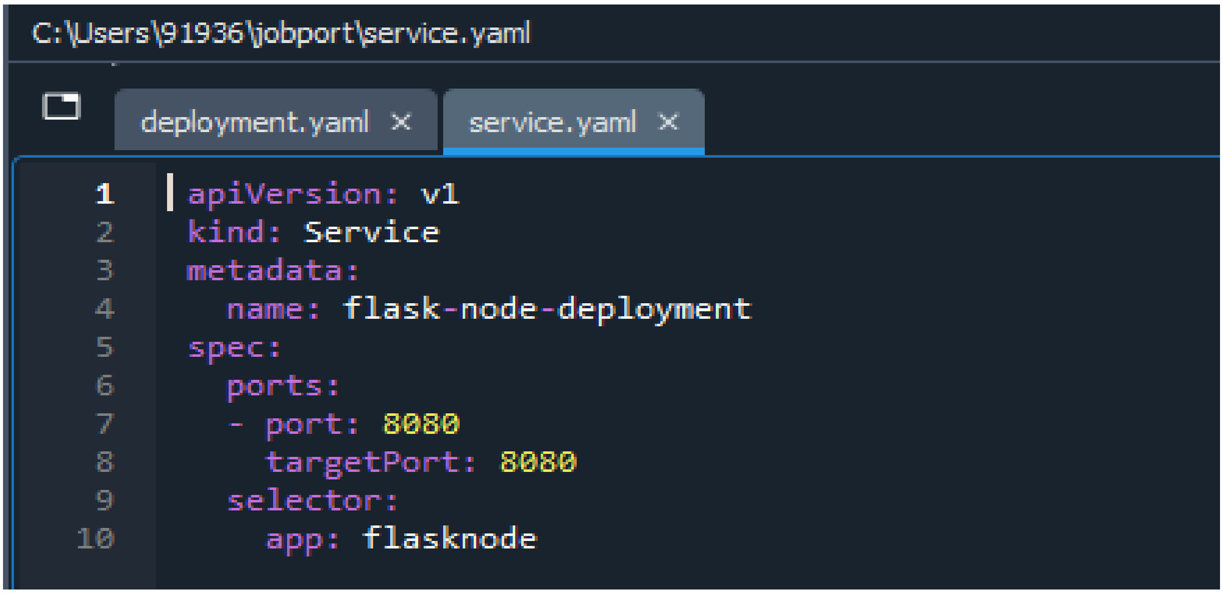
Step 2: In the deployment.yaml file , add the following information



C:\Users\91936\jobport\deployment.yaml

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: flask-node-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: flasknode
  template:
    metadata:
      labels:
        app: flasknode
    spec:
      containers:
      - name: flasknode
        image: au.icr.io/jobportapp/safreenrepo
        imagePullPolicy: Always
        ports:
        - containerPort: 8080
```

Step 3: In the service.yaml file , add the following details



```yaml
apiVersion: v1
kind: Service
metadata:
  name: flask-node-deployment
spec:
  ports:
  - port: 8080
    targetPort: 8080
  selector:
    app: flasknode
```

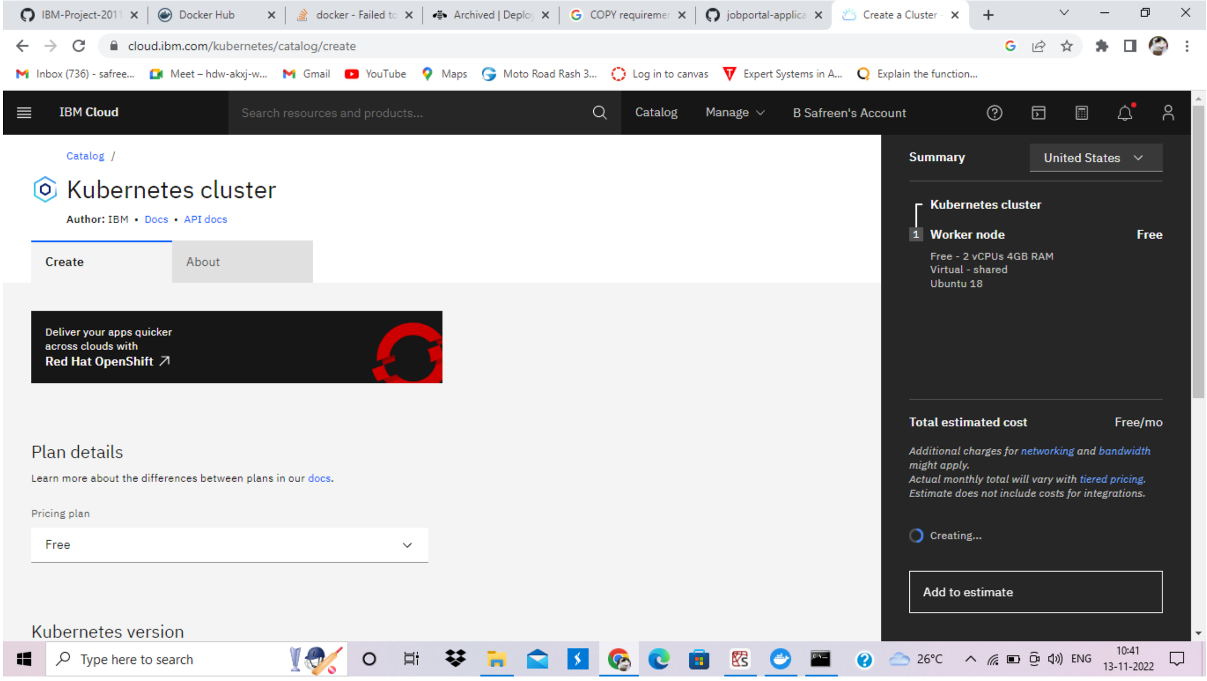
Explanation and breakdown of the deployment.yaml code

1. A deployment named flask-node-deployment is created, indicated by the .metadata.name field.
2. The deployment creates one replicated pod, indicated by the replicas field.
3. The selector field defines how the Deployment finds which Pods to manage. In this case, we simply select on one label defined in the Pod template (app: flasknode). However, more sophisticated selection rules are possible, as long as the Pod template itself satisfies the rule.
4. The pod template's specification, .template.spec, indicates that the pods run one container, flasknode, which runs the app private registry image.
5. The deployment opens port 8080 for use by the Pods.

Explanation and breakdown of the service.yaml code

1. The service.yaml's specification will create a new service object named flask-node-deployment which targets TCP port 8080 on any Pod with the "app=flasknode" label. This Service will also be assigned an IP address (sometimes called the cluster IP), which is used by the service proxies (see below). The Service's selector will be evaluated continuously and the results will be POSTed to an Endpoints object also named flask-node-deployment.
2. Note that a service can map an incoming port to any targetPort. By default the targetPort will be set to the same value as the port field. Perhaps more interesting is that targetPort can be a string, referring to the name of a port in the backend Pods. The actual port number assigned to that name can be different in each backend Pod. This offers a lot of flexibility for deploying and evolving your Services. For example, you can change the port number that pods expose in the next version of your backend software, without breaking clients.

Step 4: Login to ibmcloud and in the Catalog , search for the Kubernetes Service and create one cluster



cloud.ibm.com/kubernetes/catalog/create
IBM Cloud
Search resources and products...
Catalog
Manage
B Safreen's Account
Catalog /
Create
About
Deliver your apps quicker across clouds with Red Hat OpenShift
Add to estimate
Type here to search
26°C
ENG
10:41
13-11-2022

Kubernetes cluster

Author: IBM • Docs • API docs

Plan details

Learn more about the differences between plans in our docs.

Pricing plan: Free

Kubernetes version

Summary — United States

Kubernetes cluster

1 Worker node — Free

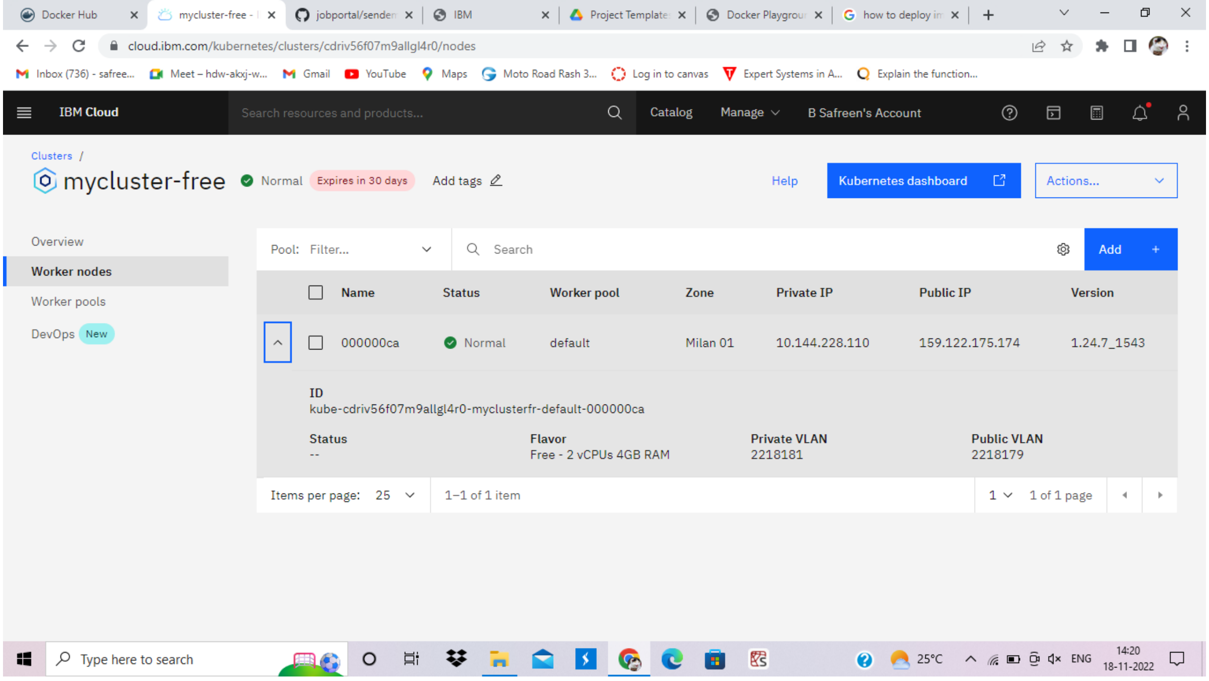
Free - 2 vCPUs 4GB RAM
Virtual - shared
Ubuntu 18

Total estimated cost — Free/mo

Additional charges for networking and bandwidth might apply.
Actual monthly total will vary with tiered pricing.
Estimate does not include costs for integrations.

Creating...

Step 5: When the Kubernetes cluster is opened , you see the page which contains Workerernodes, click the workernodes , Note the public Ip



mycluster-free — Normal — Expires in 30 days

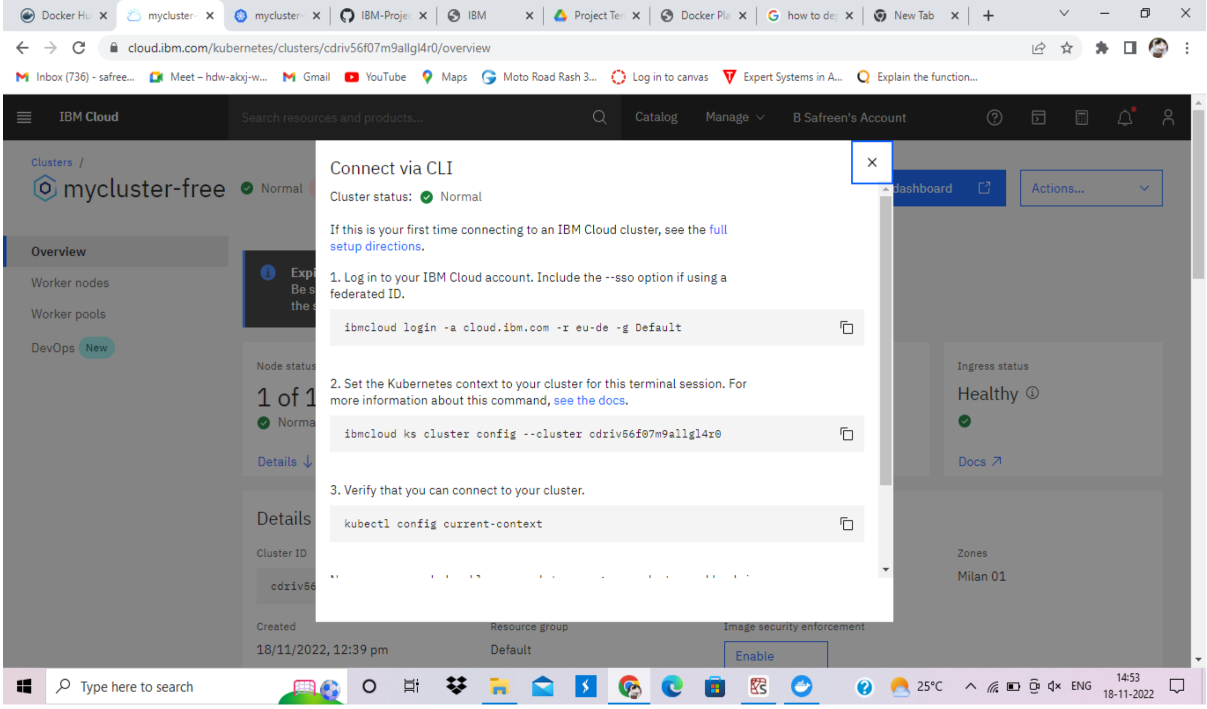
Name	Status	Worker pool	Zone	Private IP	Public IP	Version
000000ca	Normal	default	Milan 01	10.144.228.110	159.122.175.174	1.24.7_1543

ID
kube-cdriv56f07m9allgl4r0-myclusterfr-default-000000ca

Status	Flavor	Private VLAN	Public VLAN
--	Free - 2 vCPUs 4GB RAM	2218181	2218179

Items per page: 25 — 1–1 of 1 item — 1 — 1 of 1 page

Step 6: Click the Actions and click Connect via CLI



Connect via CLI

Cluster status: Normal

If this is your first time connecting to an IBM Cloud cluster, see the full setup directions.

1. Log in to your IBM Cloud account. Include the --sso option if using a federated ID.

```
ibmcloud login -a cloud.ibm.com -r eu-de -g Default
```

2. Set the Kubernetes context to your cluster for this terminal session. For more information about this command, see the docs.

```
ibmcloud ks cluster config --cluster cdriv56f07m9allgl4r0
```

3. Verify that you can connect to your cluster.

```
kubectl config current-context
```

Step 7: Deploy your application to Kubernetes

Target the IBM Cloud Kubernetes Service region where you want to work.

```
ibmcloud cs region-set us-south
```

Set the context for the cluster in your CLI.

```
ibmcloud cs cluster-config cluster_kunal
```

Verify that you can connect to your cluster by listing your worker nodes.

```
kubectl get nodes
```

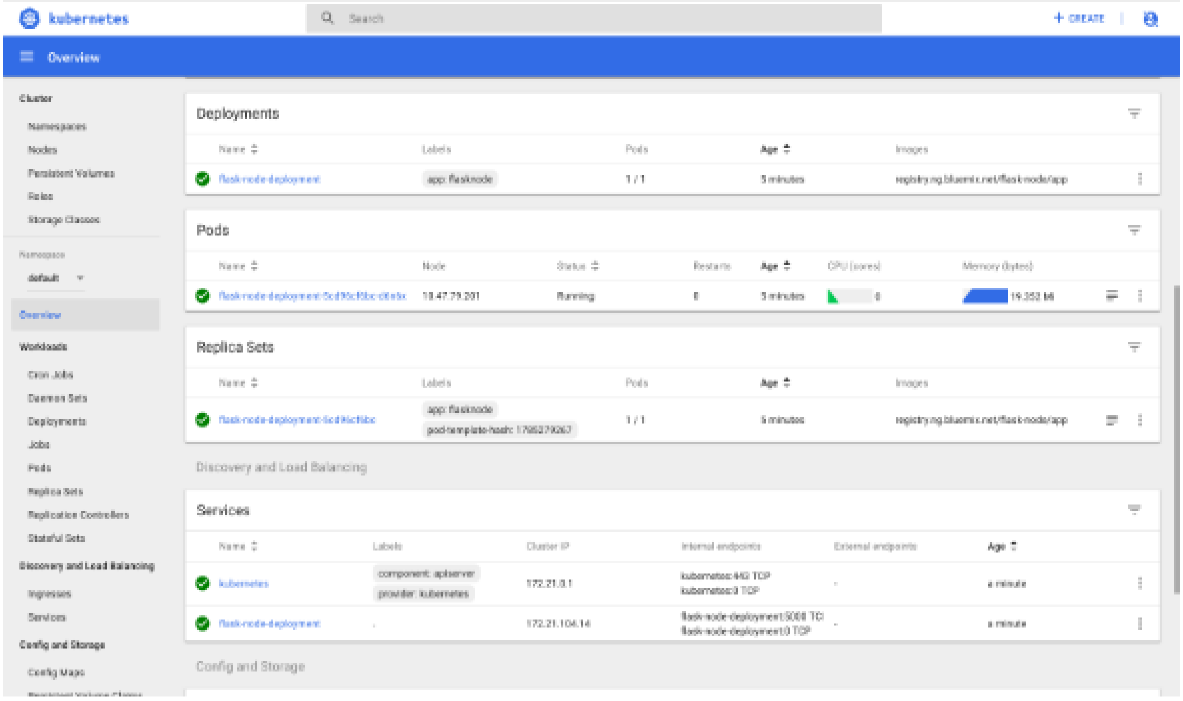
Create the deployment.

```
kubectl create -f deployment.yaml
```

Create the service.

```
kubectl create -f service.yaml
```

Step 8: Look at the Kubernetes dashboard from the IBM Kubernetes Service overview page.



Deployments

Name	Labels	Pods	Age	Images
flask-node-deployment	app: flasknode	1 / 1	5 minutes	registry.ng.bluemix.net/flask-node/app

Pods

Name	Node	Status	Restarts	Age	CPU (cores)	Memory (bytes)
flask-node-deployment-5cd96cf6bc-d8n5x	10.47.79.201	Running	0	5 minutes	0	19.352 Mi

Replica Sets

Name	Labels	Pods	Age	Images
flask-node-deployment-5cd96cf6bc	app: flasknode pod-template-hash: 1798279267	1 / 1	5 minutes	registry.ng.bluemix.net/flask-node/app

Discovery and Load Balancing

Services

Name	Labels	Cluster IP	Internal endpoints	External endpoints	Age
kubernetes	component: apiserver provider: kubernetes	172.21.0.1	kubernetes:443 TCP kubernetes:0 TCP	-	a minute
flask-node-deployment	-	172.21.104.14	flask-node-deployment:5000 TC flask-node-deployment:0 TCP	-	a minute

Config and Storage

Step 9 : Finally, go to your browser and ping the Public IP of your worker node.